

# **FOCAL PLANE ARRAY FOR THZ IMAGER AND ASSOCIATED METHOD**

## **ABSTRACT OF THE DISCLOSURE**

5           A high-frequency imaging system for the millimeter and submillimeter  
radiation includes a high frequency lens to image an object at its focal plane. The  
object emits electromagnetic radiation at a first frequency above the microwave band  
of the electromagnetic spectrum. A local oscillator generates an electromagnetic  
beam at a second frequency to illuminate a plurality of dual-frequency antennas at the  
10   focal plane of the lens. Intermodulation of first and second frequencies generates a  
signal distribution of a third frequency over the focal plane, which represents an  
image. Also, a method of providing an image at the third frequency of an object  
emitting electromagnetic radiation at a first frequency is provided. The method  
includes imaging the electromagnetic radiation at the first frequency from each point  
15   of the object onto the focal plane. An electromagnetic beam is transmitted to  
illuminate all elements of the focal plane array.

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